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DIANTHUS BARBATUS „GREEN TRICK" NEW SORTIMENTS USED IN THE FLORAL DESIGN

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Abstract
The emergence of new varieties within the Dianthus barbatus species grown in protected areas and used worldwide in floral art implies their promotion also in our country in order to know the culture technology and the possibilities of use. The production of Turkish carnations in our country in greenhouses is a novelty and requires the knowledge of modern technologies of forced cultivation, as well as suitable assortment for this type of culture. The group of biennial plants, including the species Dianthus barbatus cultivated under the conditions of our country, are present in the gardens and park gardens for a shorter period, abundantly blooming, but globally it is increasingly used as a cut flower under forced culture conditions. The present paper presents general aspects of the Dianthus genus as well as aspects related to morphology, biology and culture in protected areas of the species Dianthus barbatus, "Green Trick" variety. Nowadays, it is worth investing more and more to invest in modern technologies or in new plant varieties, even if this sometimes requires patience and much skill. Also, in the present paper we tried to highlight the importance of Turkish carnations and the possibilities of using them in floral design. Floral art is the realization of a floral composition based on visual effects, in harmony and contrast, inspired by the beauty of nature.

Keywords: floral art, forcing, greenhouses, Turkish carnation.

1. INTRODUCTION

The carnation culture occupies the second place in the worldwide, competing with the roses cultivated for cut flowers.

Dianthus is a botanical genus which has over 300 species that are annuals, biennials or perennials, belonging to the family *Caryophyllaceae*, originally mainly from Europe and Asia, but also identified mainly in Japan (Șelaru, 2007), but it also includes some species that extend to northern Africa. Species within the genus may be biennials, perennials, or short-lived perennials grown and sold as cut flowers, potted flowering plants, or bedding plants, or used as elements in mixed containers (http://www.aces.edu/pubs/docs/A/ANR-1313/ANR-1313.pdf).

The carnations were discovered in the Far East, mentioned through the Roman mythology and were recorded for the first time by Plinius in the year 50 AD (Cantor, 2016).

From the archaeological excavations and the old documents it appears that the history of the carnations as garden plants extends to antiquity. In the book, The History of Plants" by Greek naturalist Theophrastus (300 BC) it appears that carnations as garden flowers have been known in southern Europe for more than 2000 years. Honorable place in the ancient Greek civilization, the

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carnations became a symbol of the Romans during the glory of the Empire. They were also known as „The flowers of Jupiter" one of the most admired Roman gods (http://www.diane.ro/2008/11/legenda-garoafei.html).

At the end of the sixteenth century, the carnations culture was successful in France, Italy, Spain, Germany through many varieties of wonderful color with large and odorous inflorescences.

In the seventeenth century and the first half of the eighteenth century can be considered as the culmination of the carnation culture. At the end of the eighteenth century, the carnation culture meets a decline, its place being taken by the exotic plant culture. In Romania, Italian and American carnations are grown in greenhouses and `Chabaud` carnations and other species are grown in the field. In 1957 with the occasion of the Nantes floral exhibition, our country received the 2nd prize, surpassing countries with renown in this field such as Holland, Germany, France (Toma, 2009).

Also with the occasion of the International Flower Exhibition in Erfurt (1961) many gold medals have been received for carnations and roses (Şelaru, 2007).

Dianthus barbatus L. popularly known (common name) under the name of Turkish carnation (in Romanian), Sweet William (in English, Oillet du poete (in French) is an herbaceous which is cultivated in our country as a biennale and belongs to the genus *Dianthus* of the *Caryophyllaceae* family.

Nowadays, the most widely used in floral art of cut flowers of carnations - *Dianthus barbatus* "Sweet William" was in 2011. The design of the bridal bouquet in the UK from Kate Middleton`s wedding to Prince Williams, paying tribute to his name, the meaning of delicately fragrant inflorescences is eternal love (Figure 1).

Figure 1. Dianthus barbatus "Sweet William" with white inflorescence
source: www.theflowersavenue.com

Today we are witnessing in the diversification of the floral plant assortment by taking in culture new species or creating new varieties. In these respect, within the species Dianthus *barbatus* was created "Green Trick" variety, with green flower, which gains ground in the floral market due to the interesting color and good flower storage. This variety is highly appreciated lately for floral art bouquets and arrangements and is grown in protected areas (Cantor, 2016). The green color of the Turkish carnation symbolizes rebirth, youth and prosperity. In flower bouquets and floral arrangements, the green offers freshness and naturalness. *Dianthus barbatus* 'Green Trick' is going down a storm in the Dutch cut flower auctions, and is set to be a favorite for modern wedding bouquets and perfect for containers. The extraordinary pompom shaped, green flowers are 5 cm (2") wide and last an incredible 4 to 6 weeks in a vase.

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Hilverda Kooij was one of the few to appreciate the extraordinary flower's potential and included Green Trick in its Sparkz® series. Of all the remarkable *Dianthus* varieties in this series, 'Green Trick' is currently the most successful and in 2016 celebrated its tenth anniversary (https://www.hilverdakooij.com/en/news/435/green-trick-celebrates-its-tenth-anniversary).
Today 'Green Trick' is available year round from Holland, Israel, Ecuador and Colombia and many Romanian florists bought from Holland.

2. MORPHOLOGY OF THE SPECIES

Dianthus barbatus "Green Trick" is of Japanese origin but the development variety was carried out in the Netherlands a few years ago, and in Romania it has not been cultivated until now, but its popularity rises rapidly due to its interesting flowers.
This assortment of Turkish carnations was made by a Dutch producer of cut flowers Hilverda - de Boer (http://www.nurseriesonline.com.au/). Lately, this flower is becoming more and more appreciated in floral art, being suitable for culture in protected areas. *Dianthus barbatus* "Green Trick" presents a solid floral stem being a characteristic feature of the Dianthus genus with a globular and compact inflorescence, textured, of green color, very decorative aesthetically (https://www.redlandsdailyfacts.com/2010/02/23/old-flower-learns-a-new-trick/).
Turkish carnation "Green Trick" is heights of 20-45 cm, respectively 30 cm in diameter (Figure 2) and presented a strong stem, this being a characteristic feature of the *Dianthus* genus. Inflorescence unusual green globes of soft deeply cut petals. Both the color of the foliage and the inflorescences is green. The petals have a fluffy and soft appearance, a strong tooth with a unique texture. The period of flowering and harvesting of inflorescences is from June to the end of the October (www.gardenersworld.com).

***Figure 2. Inflorescences of Dianthus barbatus** "Green Trick"*
source: http://www.euflora.eu

3. TECHNOLOGICAL PARTICULARITIES

Dianthus barbatus rise and grows well on any soil, but prefers clay-sandy, rich in nutrients, well-drained, with a pH between 6.0-6.5 (http://www.ballsb.com). In the greenhouse, the temperature is controlled as follows: December, January, February t = 10-12ºC days and 8-10ºC nights; in March, April, October, November temperatures between 12-16ºC day and 10-12ºC night. In the summer months a temperature below 25ºC is required, while cooling the greenhouses by shading. The upper

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temperature limit for normal growth and flowering is 25ºC. In protected areas when light research more than 50.000 lucks, this causes an excessive temperature rise. In such cases we must intervene to reduce light radiation by shading the greenhouses (Anton et al., 2007). In winter, artificial lighting with incandescent bulbs of 150W can be used or fluorescent lamps located 3-3.5m away.
Moisture is directed so that the soil is constantly replenished, avoiding both excess and water insufficiency. Atmospheric humidity suitable for carnations is 70-80%. After each watering, airy needs a little in the protected culture system (Draghia and Chelariu, 2011).
Due to the intensive character of the carnation culture in protected areas, the value of organic substances is much higher than in the field, reaching 8-12 % (Toma, 2009) which is ensured by basic fertilization and mineral fertilizers insured during the vegetation period.
The multiplication is done by seeds that are sown in pots, jiffy pots or alveolar plates, sown in summer for flowering plants the following year.
To get 1000 plants, 2 grams of seeds are needed. The optimal germination temperature is 16-18^{o}C, and the plants will grow in 8-10 days after sowing, under greenhouses conditions (Toma, 2009).The seedlings are replicated 4-5 weeks after sowing, in small pots 6-8 cm in diameter, alveolar plates or nutritional cubes, then pinching for branching. Plants can also be propagated *in vitro*.
The optimal epoch of a carnation culture is spring, from March to June. The other months of the year cannot be excluded. Spring planting ensures getting of flowers from autumn to spring. It is being planted on layers of 100-120 cm width, 20-25 cm between plants and leave paths of 40-60 cm (Figure 3).

Figure 3. Culture of carnations in protected areas Dianthus barbatus "Green Trick"; source: http://sunvalleyfloralfarms.blogspot.ro

Installing the support system is very important for protected crops. The first plant support mesh is installed at about 15 cm of soil, and then as the plats grow they position another at 3-4 at distances of 17-20 cm far away. The mesh can be build on place of wires along the rows and their transverse grip with cotton or plastic yarns , resulting a network of meshes that guide floral stems. Also, the mesh can be made of thread, only to run along the furrows. They can also be made by welded wire, where durability increases to 10-15 years.
The flowers are harvested in the early hours of the morning or in the evenings when they are more turgescent. At the harvest, the floral stem is intended to be as long and the opening of the bud to be

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not complete. Harvesting is done in the bud stage or when 80% of the flower is open, because then they are easier to handle and carry (Figure 4).
Sweet Williams has moderate nutrient requirements and a complete fertilizer at 100 to 150 ppm N level is adequate Armitage, 1993 cited by Dole and Wilkins (1999).
Dianthus barbatus may have problems with *Fusarium oxysporum* and *Rhizoctonia solani*, the growing medium must be pasteurized (Dole and Wilkins, 1999). Also, insects and pests can be a problem during dianthus production. Spider mites can be a problem during hot, dry weather, particularly on *Dianthus barbatus* (http://www.aces.edu/pubs/docs/A/ANR-1313/ANR-1313.pdf).

Figure 4. Flower harvesting at D. barbatus "Green Trick"
source: http://sunvalleyfloralfarms.blogspot.ro

4. THE USE OF TURKEY CARNATIONS IN FLORAL ART

Floral artists who are, much more inventive when it comes to combining foliage and flowers than most garden designers, (OK Christo Lloyd excluded) started using green flowers in their arrangements and bouquets several years ago (https://gardendrum.com/2017/06/01/grow-green-flowers-learn-from-florists/).
"The bright green colour combined with the long vase life make Green Trick an ideal flower for bouquets," is how Hilverda Kooij's Co Overduin explains its success. "That fresh colour really looks good with anything, and the round flowers give Green Trick an unusual look. It stands out without being too dominant" (https://www.hilverdakooij.com/en/news/435/green-trick-celebrates-its-tenth-anniversary).
In order to create spectacular bouquets, it is necessary to consider the principles underlying the western floral arrangements: unity, respect of proportions, emphasis and dominance, balance, symmetry or asymmetry, quantity and volume (Cantor and Buta, 2010).
At the Turkish carnations as well as in other floral species, the quantity of flowers and other component plants is consistent with the shape and volume of the bouquet. Bulky bouquets fit into geometric figures of sphere type (Figure 5) or asymmetric, artistic forms (Figure 6).

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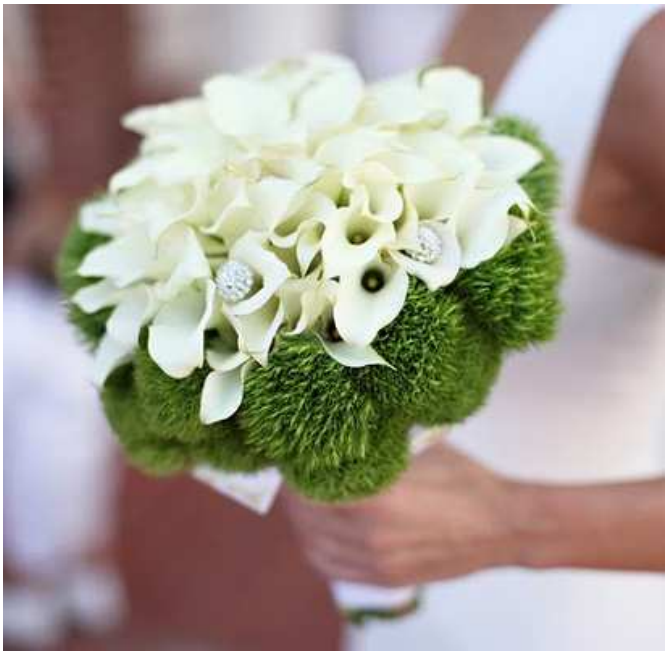

Figure 5. Round bouquet, D. barbatus "Green Trick"
source: http://sunvalleyfloralfarms.blogspot.ro

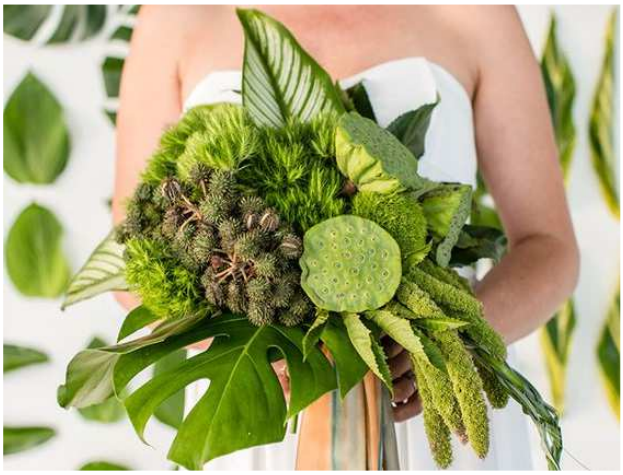

Figure 6. Asymmetric bouquet, D. barbatus "Green Trick"
source: www.pinterest.com

Bouquets made up of only a few flowers are generally devoid of volume, with emphasis being placed on flower-holding or line of motion. It can be said that it is not always the abundance of flowers that makes the beauty of the arrangement. The harmonious way of combining and achieving a perfect balance are much more important. The space between flowers in the bouquet highlights the aesthetic values and gives elegance to the composition.

The vegetal material used in floral art is very varied, but can be divided into two main categories: green vegetable material and dry vegetable material, which are used independently or together in arrangements. *Dianthus barbatus* "Green Trick" provides vitality to the arrangements made on dry vegetal material (Figure 7).

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Figure 6. Table arrangement Dianthus barbatus "Green Trick"
source: http://sunvalleyfloralfarms.blogspot.ro

Bouquets and wedding arrangements are mainly represented by the bouquet of the bride and the godmother (Șelaru, 2004). Besides, in the wedding bouquets and arrangements, the corsages, for weddings parties are also meet (Figure 7).

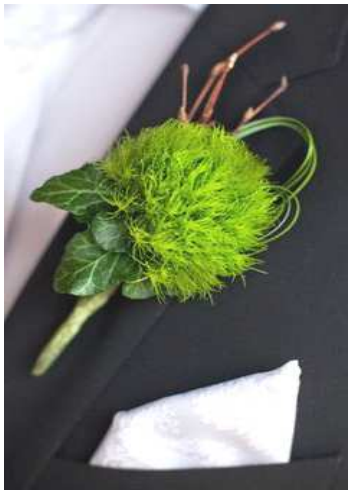

Figure 7. Corsage with Dianthus barbatus "Green Trick"
source: www.pinterest.com

5. CONCLUSIONS

Under the *Dianthus* genre, Turkish carnations are gaining ground worldwide due to their distinctive decorative qualities (green color slightly found in flowers, good shelf life, resistance to diseases and pests). In Romania the introduction of a new assortment of carnations to produce flowers throughout the year in protected areas, is a great prospect for the floriculture industry. In these sense, we consider the species *Dianthus barbatus* to be of great prospect due the multiple use as flower cut in floral design: bouquets, arrangements for meals and various festive occasions or their location strictly in decorative pots, solitary or homogeneous, using only carnations or in combination with other floral vegetal materials.

A major importance is represented by the "Green Trick" Turkish carnations in our country, due to the significant demand for cut flowers and trends in floral art. With the regard to the cut flowers

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industry, significant amounts of *Dianthus barbatus* "Green Trick" serves as living tools in the florist`s creations in novel arrangements precious to be noted in any floral composition. Also it is not to be neglected that the "Green Trick" can be an inexhaustible source, both for growers and for floral artists.

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